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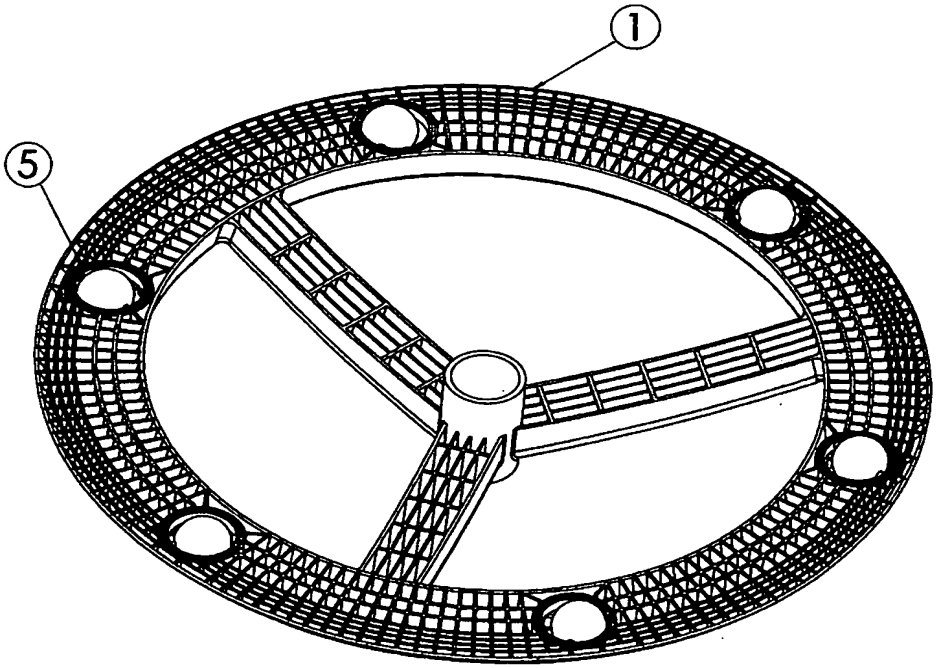
(54) Titre : PIETEMENT DE FAUTEUIL DE BUREAU
(54) Title: OFFICE CHAIR BASE



(57) Abrégé/Abstract:
An office chair base is the bottom part of every office chair securing its vertical stability and providing free movement in a horizontal plane perpendicular to the axis of the vertical support column. The movement in all existing office chair bases is effectuated by means of using casters. In this invention the casters are eliminated and replaced by new movement mechanisms consisting of radial ball bearing in a horizontal plane and injection molded plastic ball, eccentrically mounted to it. The mechanisms will not be visible to the user and will be located in sockets on the side facing the floor.

Abstract

An office chair base is the bottom part of every office chair securing its vertical stability and providing free movement in a horizontal plane perpendicular to the axis of the vertical support column.

The movement in all existing office chair bases is effectuated by means of using casters.

In this invention the casters are eliminated and replaced by new movement mechanisms consisting of radial ball bearing in a horizontal plane and injection molded plastic ball, eccentrically mounted to it.

The mechanisms will not be visible to the user and will be located in sockets on the side facing the floor.

Specification

The invention relates to an office chair base.
In all existing office chair bases casters are being used as a separate structural element. They vary in size and form, but inevitably form part of the office chair architecture.

The caster, is the only office chair element that has not been radically redesigned over the years and has become a serious aesthetic handicap.

Attempts in this direction have been made in the past, as we can see in U.S. patents 4,998,699 and 3,528,635, which do not go beyond improving the form and function of the casters.

I found out that replacing the casters with new movement mechanism, consisting of radial ball bearing and injection molded plastic ball, eccentrically mounted to it, located in sockets inside a ribbed injection molded base, will result in more compact office chair base solution with a smoother movement and more uniform load distribution to the floor cover.

Eliminating the casters will also provide designers all over the world with new aesthetic possibilities for expression.

Brief Description of the Drawings

Figure 1	is top view of Element 1	scale 1:4
Figure 2	is bottom view of Element 1	scale 1:4
Figure 3	is detail A of Element 1 on Fig.2	scale 1:2
Figure 4	is cross section of line AA on Fig.1	scale 1:3
Figure 5	is exploded view of movement mechanism	scale 1:1
Figure 6	is side view of movement mechanism with Element 5 removed	scale 2:1
Figure 7	is top view of movement mechanism	scale 2:1
Figure 8	is isometric view of movement mechanism	scale 2:1
Figure 9	is front view of office chair base assembly	scale 1:3
Figure 10	is isometric top view of the office chair base assembly	scale 1:4
Figure 11	is bottom view of the office chair base assembly	scale 1:4
Figure 12	is exploded view of the office chair base assembly	scale 1:4
Figure 13	is isometric bottom view of the office chair base assembly	scale 1:4

Detailed Description of the Preferred Embodiments

Element 1(Fig.1, Fig.2, Fig.3, Fig.4, Fig.12) is a single injection molded part with cosmetic finish on top and ribbing at bottom.

It consists of a central top cylindrical section, three uniformly spaced out ribbed angled legs protruding from it and connecting it to a ribbed bottom ring shaped section with sockets on the side facing the floor.

The central top cylindrical section has a centrally located shaft and is designed to accommodate and hold into vertical position all standard manufactured vertical support columns currently available on the market, with or without a gas lift, and give them the necessary clearance from the floor.

The central top cylindrical section is the principal load-bearing element of the office chair base carrying the loads of all office chair components located above and inside it plus the weight of the office chair user.

The three uniformly spaced out angled ribbed legs will transmit the above-mentioned loads to the ribbed bottom ring shaped section.

The ribbed bottom ring shaped section (Fig.2, Fig.3, Fig.12) has two functions:

- to provide for the free movement of the office chair base in a horizontal plane perpendicular to the axis of the vertical support column.
- to transmit the loads further down to the floor.

The ribbing of the bottom ring shaped section is designed in such a way as to provide for the uniform load distribution along its perimeter and to form six equally spaced out sockets (Fig.2, Fig.12).

In each of these sockets a mechanism enabling the free movement of the office chair base is installed. It consists of the following:

Element 5 is radial ball bearing for combined radial and axial loads.

Element 3 is steel deep drawn predrilled insert.

Element 4 is steel dowel pin.

Element 2 is injection molded plastic ball with shaft.

The mechanism is assembled in the following sequence:

Injection molded plastic ball Element 2 is inserted into steel deep drawn predrilled insert Element 3 with holes and shaft aligned.

Steel dowel pin Element 4 is then hammered in.

Excess material at the ends of steel dowel pin Element 4 is removed to match the curvature of steel deep drawn predrilled insert Element 3.

Steel deep drawn predrilled insert Element 3 is tight fit mounted on radial ball bearing Element 5.

One assembled mechanism is then tight fit mounted in each of the six sockets located in the bottom ring shaped section of Element 1.

Mode of operation of movement mechanism:

Each mechanism receives one sixth of the load and transmits it through radial ball bearing Element 5, steel deep drawn predrilled insert Element 3, steel dowel pin Element 4 and injection molded plastic ball Element 2 to the floor.

The axial center of injection molded plastic ball Element 2 and radial ball bearing Element 5 are eccentrically located. If a change of direction in the horizontal component of the applied force occurs, this will result in axial rotation of radial ball bearing Element 5 until steel dowel pin Element 4 is aligned perpendicular to the direction of the horizontal component of the force, thus enabling the injection molded ball to freely roll.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1.An injection molded office chair base with cosmetic finish on top and ribbing at bottom consisting of a central top cylindrical section with centrally located shaft, three uniformly spaced out ribbed angled legs protruding from it and connecting it to a ribbed bottom ring shaped section with equally spaced out sockets on the side facing the floor.

2. An injection molded office chair base as defined in claim 1, in which the centrally located shaft is designed to accommodate and hold into vertical position all standard manufactured office chair vertical support columns currently available on the market, with or without a gas lift, and give them the necessary clearance from the floor.

3. An injection molded office chair base as defined in claim 1 and claim 2, where in each of the sockets a movement mechanism is installed, consisting of:

- ball bearing in a plane parallel to the floor.
- insert mounted to the bearing.
- dowel pin mounted to the insert.
- plastic ball with shaft, with the dowel pin located in the shaft.

4. An injection molded office chair base as defined in claim 1, claim 2 and claim 3, where the axial center of the ball bearing and the axial center of the plastic ball in the movement mechanism are eccentrically located.

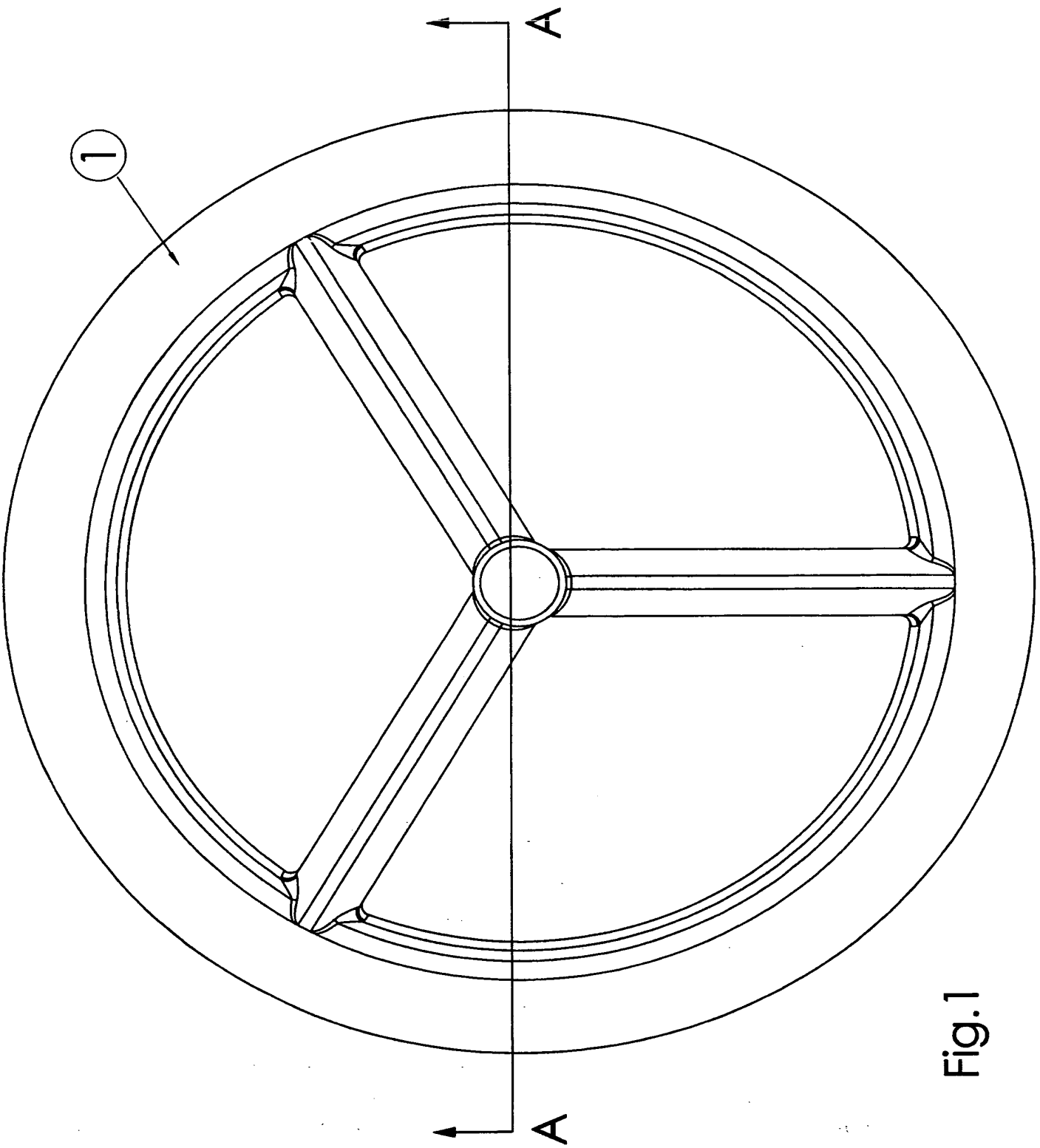


Fig.1

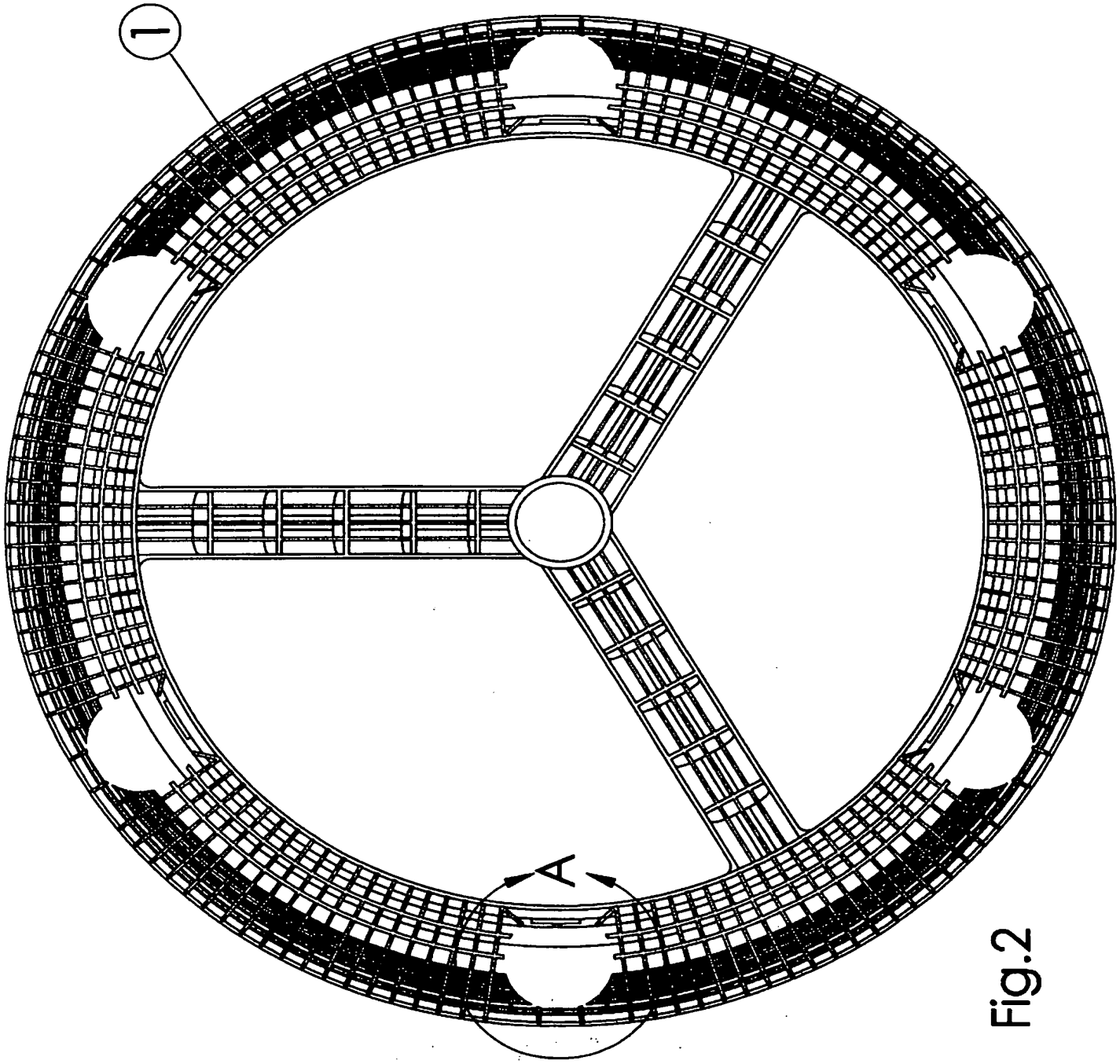


Fig.2

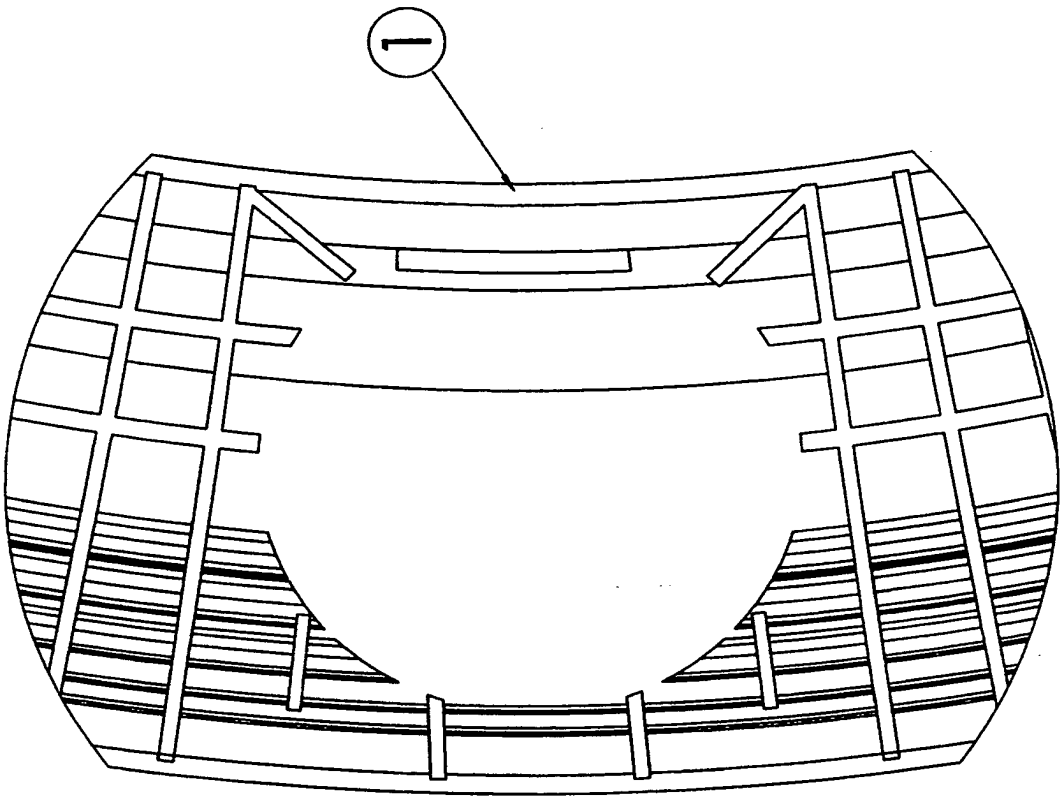


Fig.3

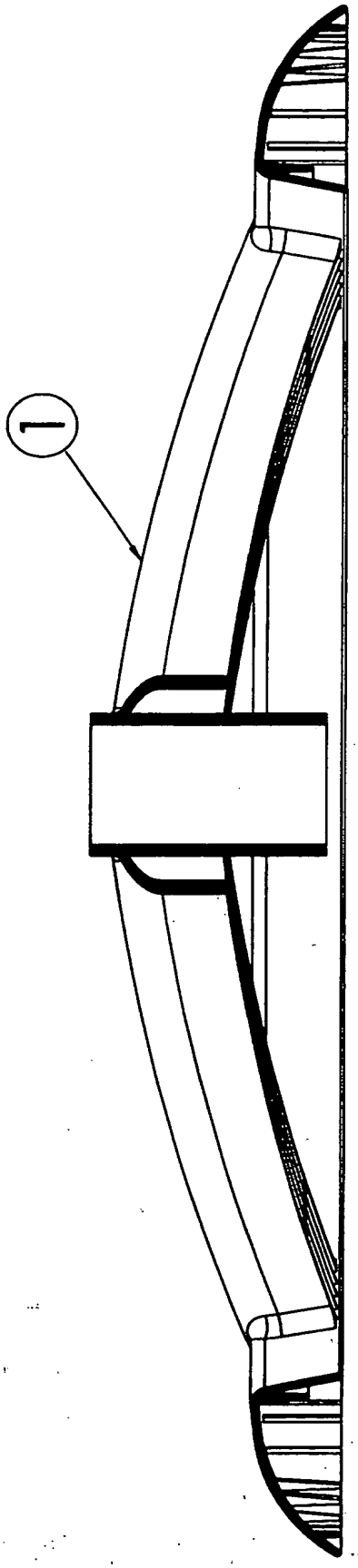


Fig.4

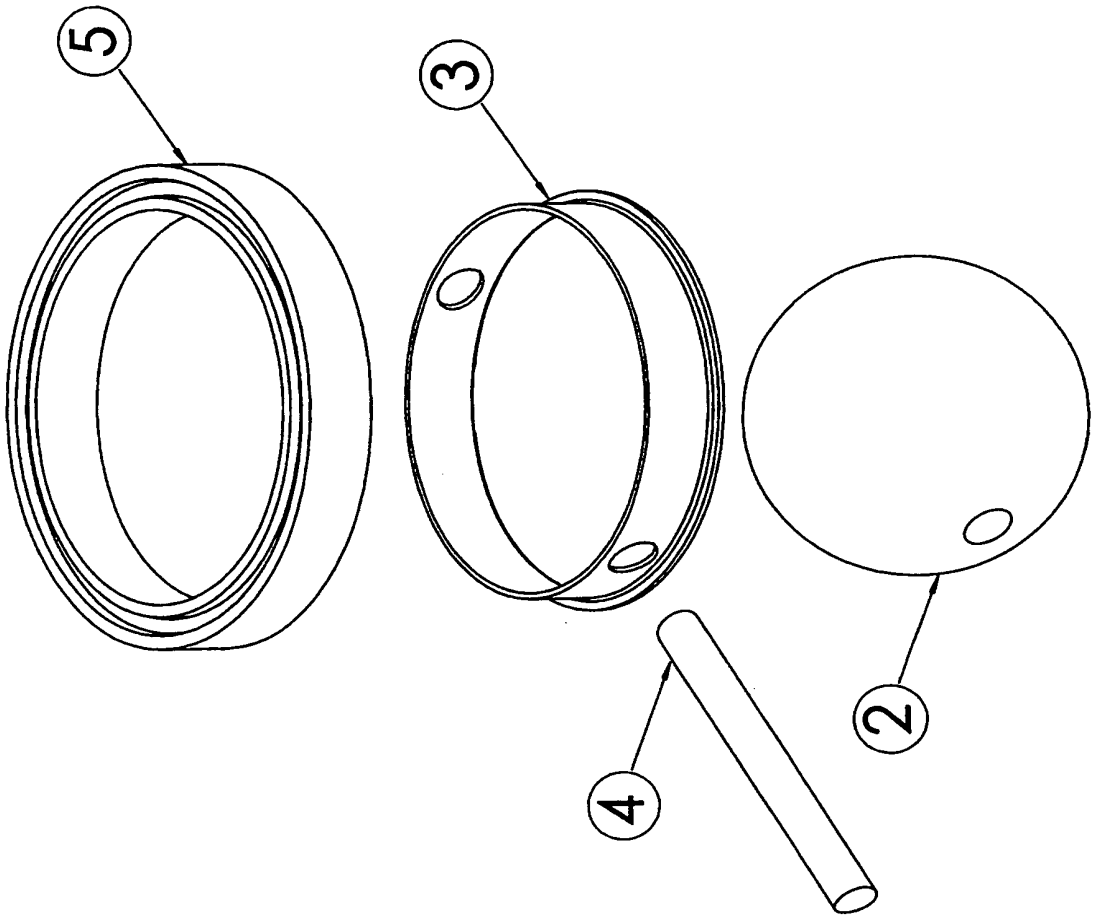


Fig.5

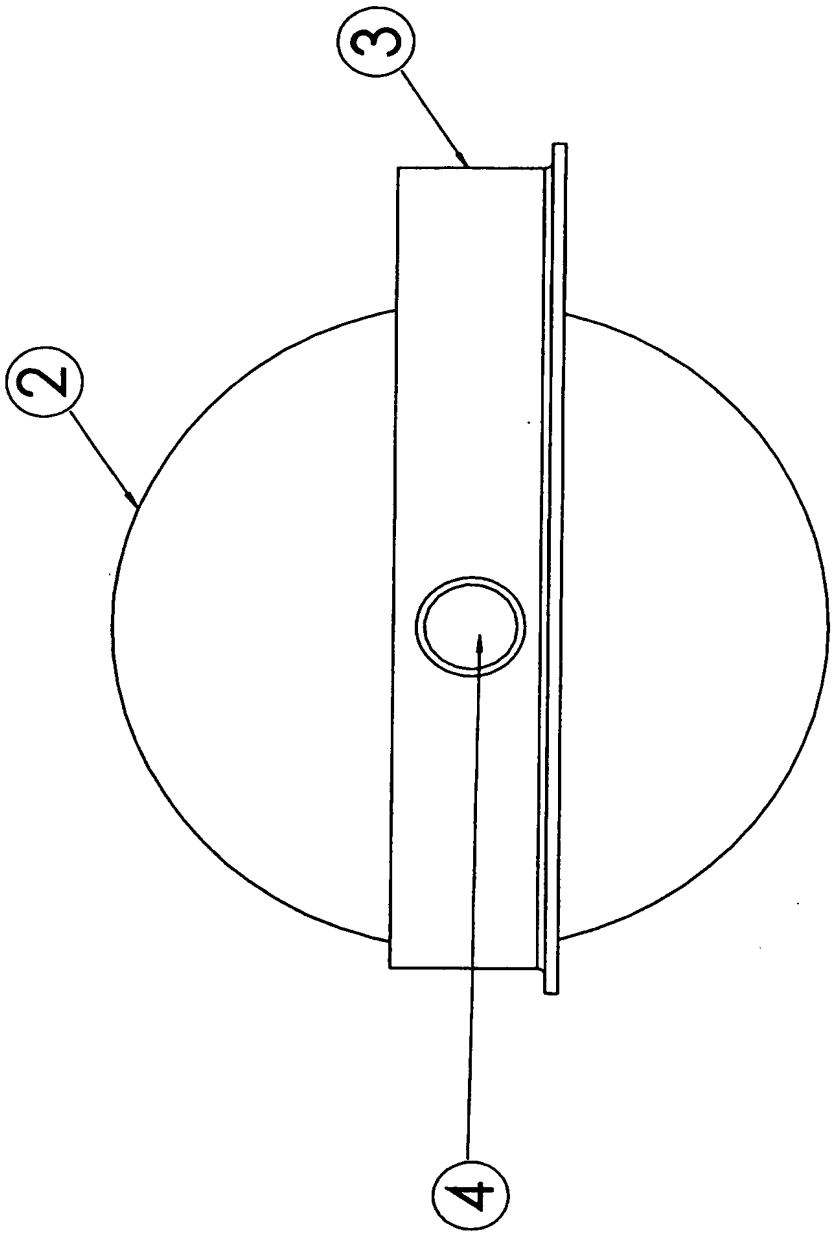


Fig.6

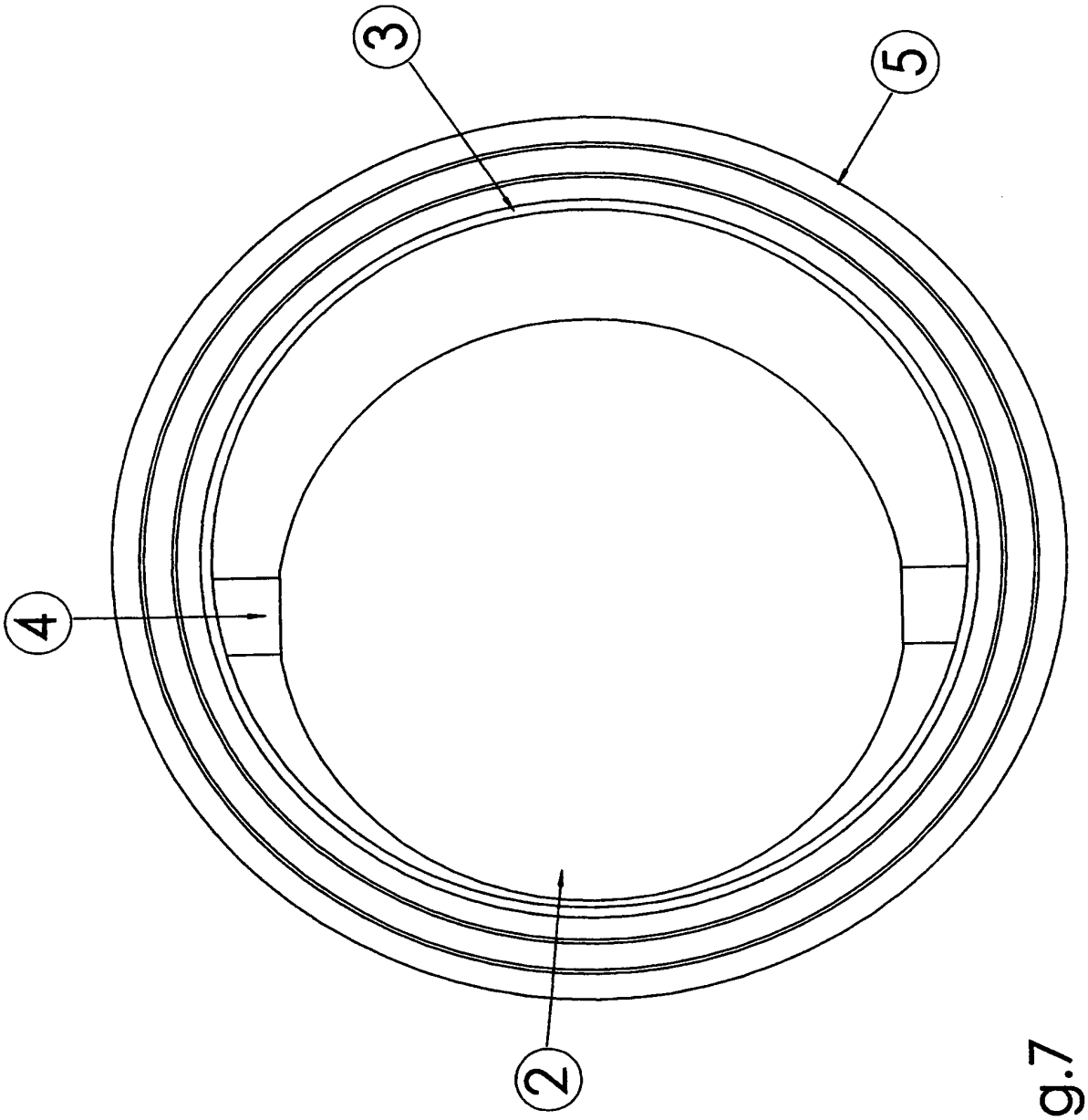


Fig.7

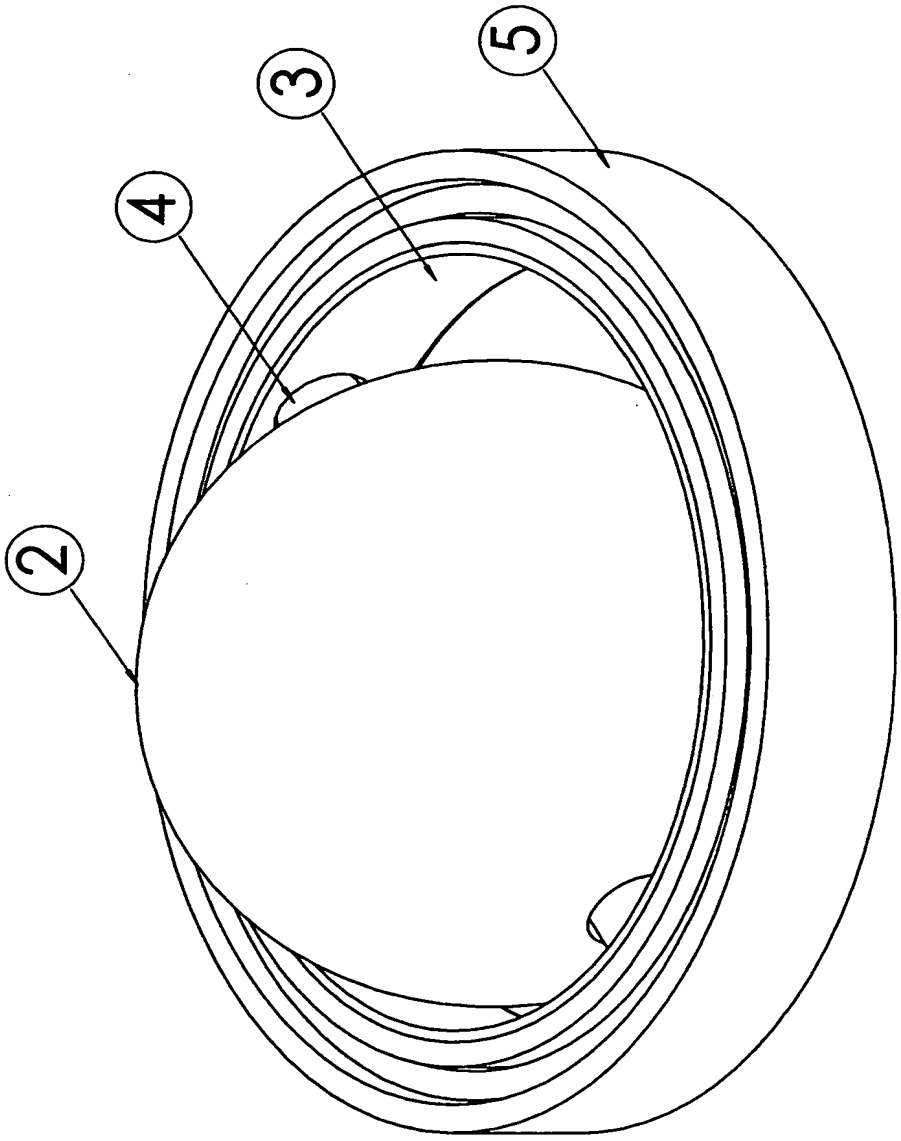


Fig.8

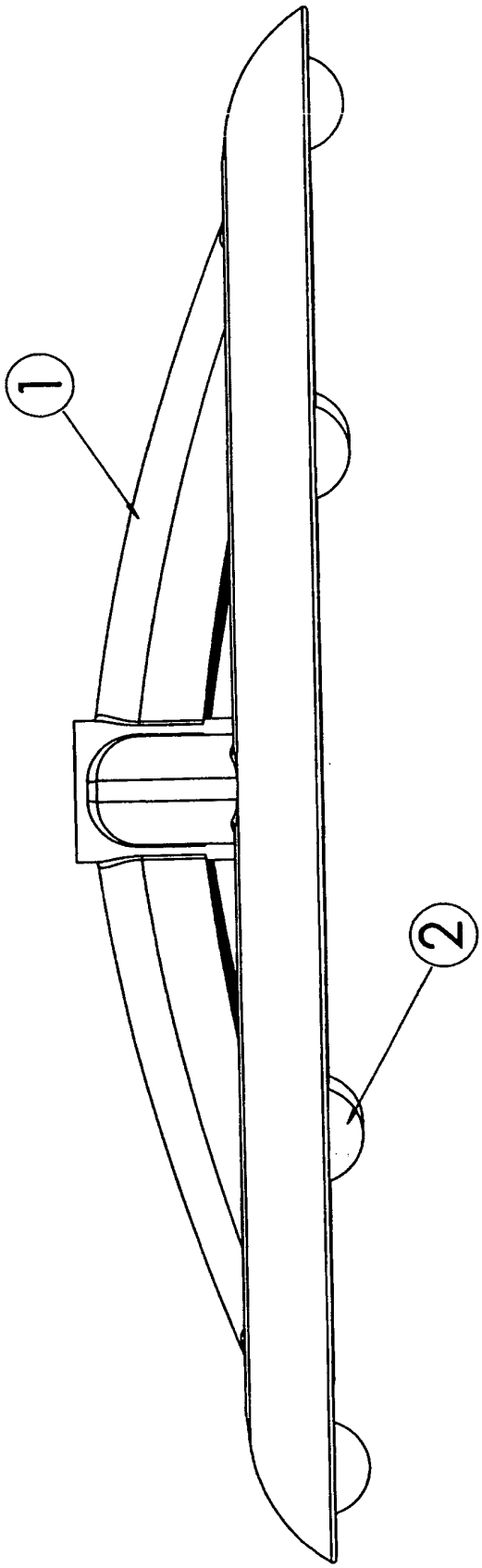


Fig.9

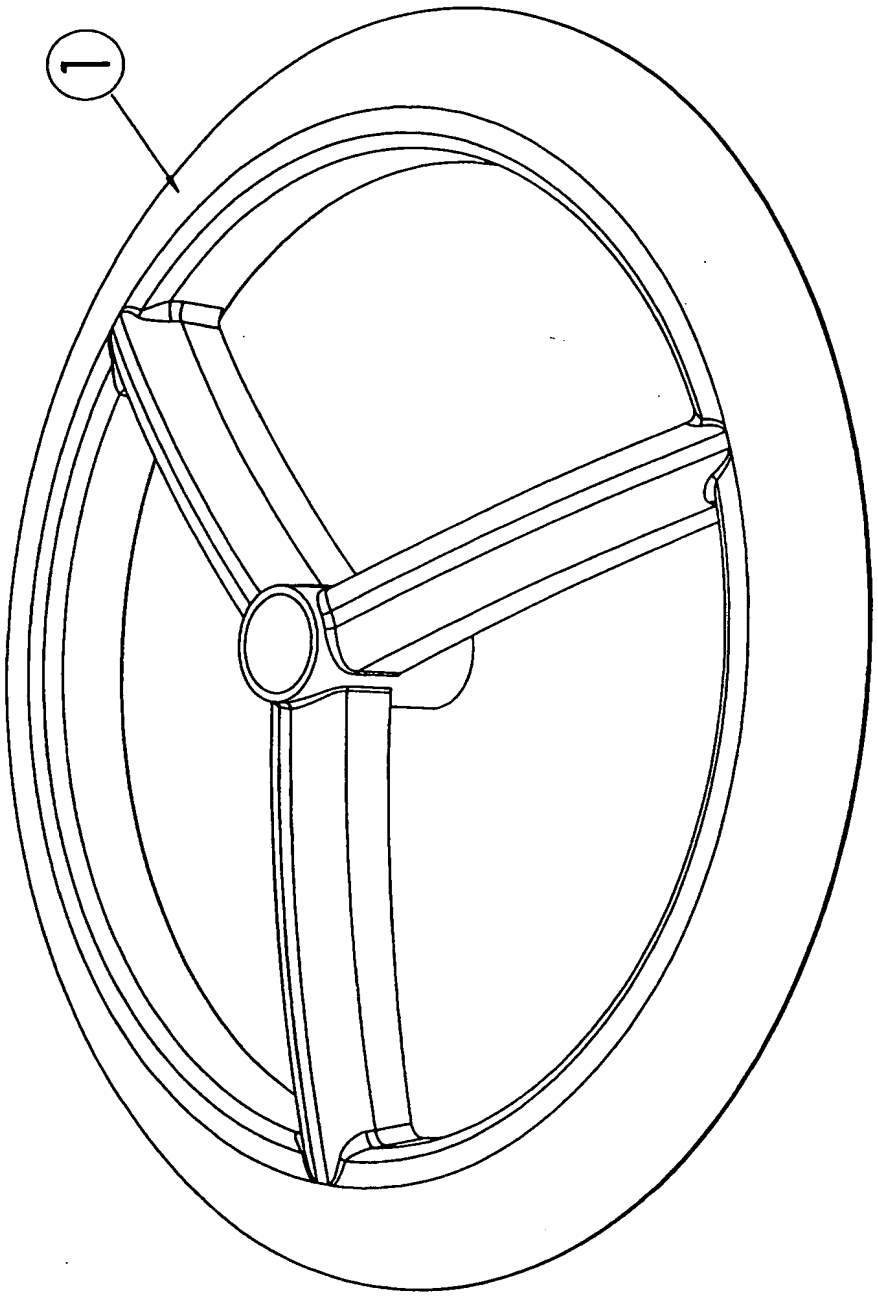


Fig.10

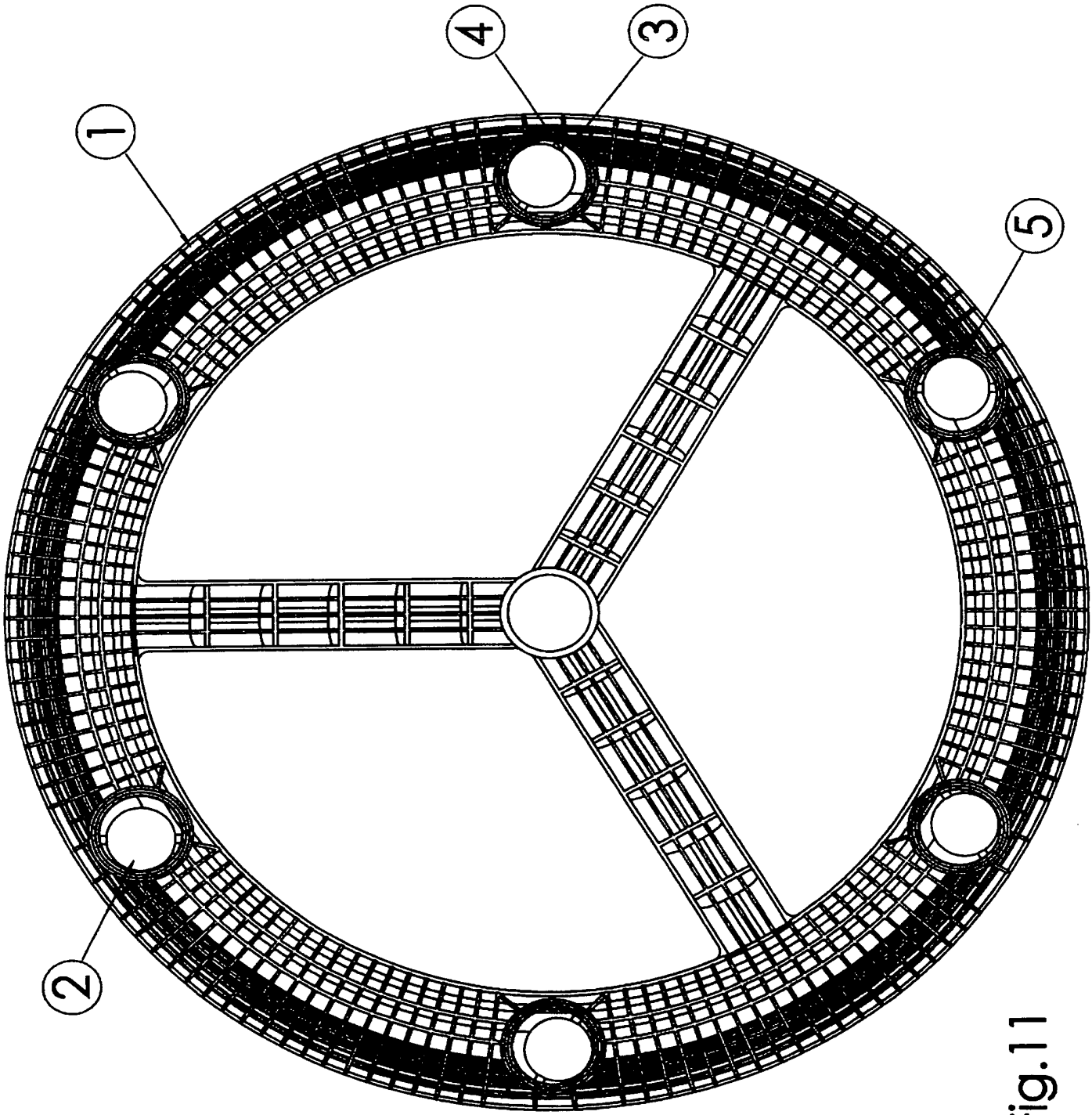


Fig.11

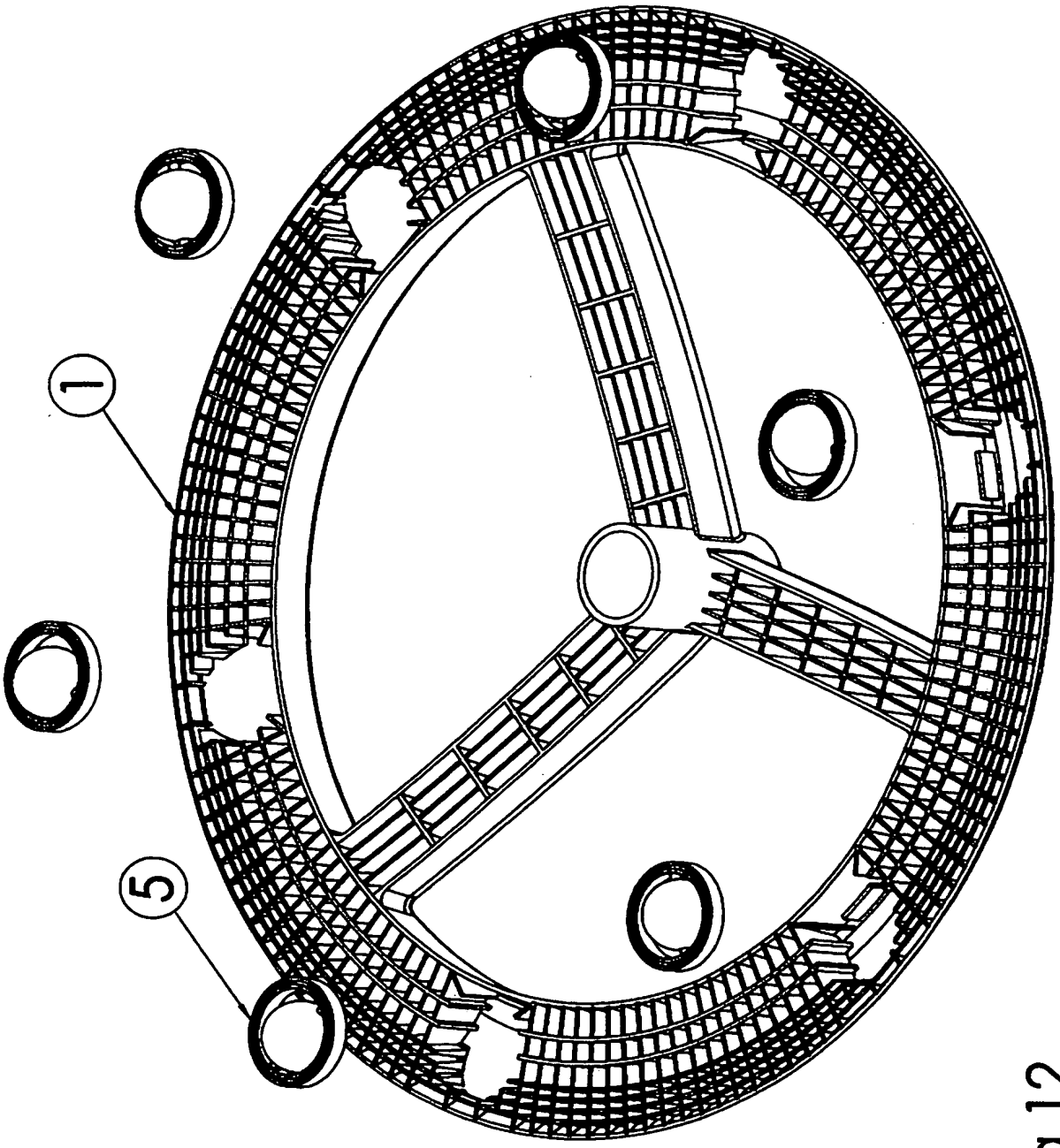


Fig.12

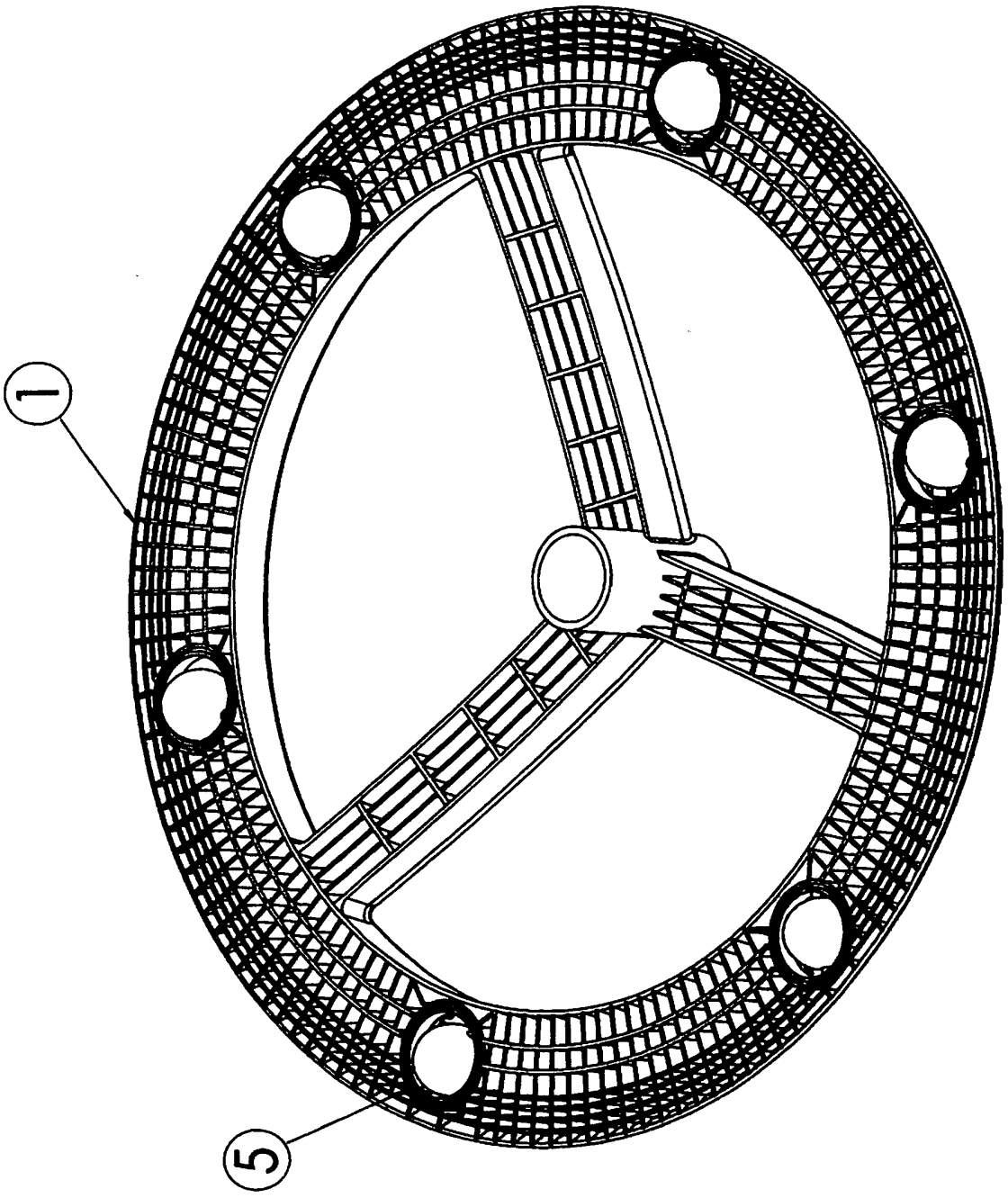


Fig.13